

**Page Denied**

DOE review completed.

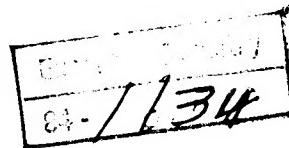
DOE/ISA/CTN-84-003

National Security Information  
Unauthorized Disclosure Subject to Criminal Sanctions**SECRET**This document consists of 8 pages.  
This is copy 302 of 392 copies. Series A.

# ctn



critical technologies newsletter

Department of Energy/  
Office of International Security Affairs**March 1984****Inside:**

*STIC tutorial*  
*DOE's role in MCTL process*

DOE review completed.

Derivative Classifier: Michael E. Busse, IT Division Special Security Officer.  
Classified by NFIB memo 9.1/36 DTD 12/21/78.  
Declassify on: OADR.

L-275

**SECRET/WNN/111**

# contents

## technology transfer

- 2 STIC: mission, functions, and products (U)
- 4 DOE MCTL team continues work on Sec. 17 (U)
- 8 Distribution

## credits

**Published by:**

Politico-Military Security Affairs Division of the Office of International Security Affairs, US Department of Energy

**DOE Project Manager:**

J. Robert Cutter, 202-252-2155

**Editor:**

Jill Warren

**Managing editor:**

Barbara Canavan

**Design and production:**

Kathi Geofrion Parker

**Composition and printing:**

Los Alamos National Laboratory Information Services Division

**Correspondence:**

Editors  
Critical Technologies Newsletter  
P.O. Box 503  
Los Alamos NM 87544

**Phone:**

FTS 843-6922 or 1-505-667-6922

**Notice:** Reproduction of this document requires the written consent of the originator, his/her successor, or higher authority. This report was prepared as an account of work sponsored by the United States Government. Neither the United States nor the United States Department of Energy, nor any of their employees, nor any of their contractors, subcontractors, or their employees makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product or process disclosed, or represents that its use would not infringe privately owned rights.

# technology transfer

## *STIC: mission, functions, and products (U)*

25X1

STIC (the Scientific and Technical Intelligence Committee), one of the key organizations in the technology transfer arena, was born from a recognition of the importance of making continual assessments of foreign scientific and technical strengths and weaknesses, particularly in the Soviet Union, to support national security policy.

Under guidance from the Director of Central Intelligence (DCI), a committee structure was designed to focus and task Intelligence Community collection assets against scientific and technical intelligence issues and to provide for technical assessments of foreign technologies.

This early intelligence committee structure was subordinated to the US Intelligence Board (USIB), which has since evolved into the National Foreign Intelligence Board (NFIB) and the present DCI committee structure (Fig. 1). Through this structure, the Intelligence Community can better direct intelligence collection through SIGINT, COMIREX, and HUMINT and produce finished intelligence and assessments for national level consumers through its production committees, of which STIC is one (the others being EIC, WSSIC, JAEIC, and TTIC).

**Mission**

Though STIC has been in existence for 20 years, its mission was updated and redescribed in DCI Directive for Foreign Scientific and Technical Intelligence (18 June 1982) as follows: "The Committee will advise and assist the Director of Central Intelligence in the discharge of his duties and responsibilities with respect to production, coordination, and evaluation of intelligence on foreign scientific and technical developments and will promote the effective use of Intelligence Community resources for this purpose."

To fulfill this mission, STIC draws its primary membership from the NFIB community and supplements this expertise with associate members from other governmental departments that have overlapping interests with the Intelligence Community (Fig. 2).

**Functions**

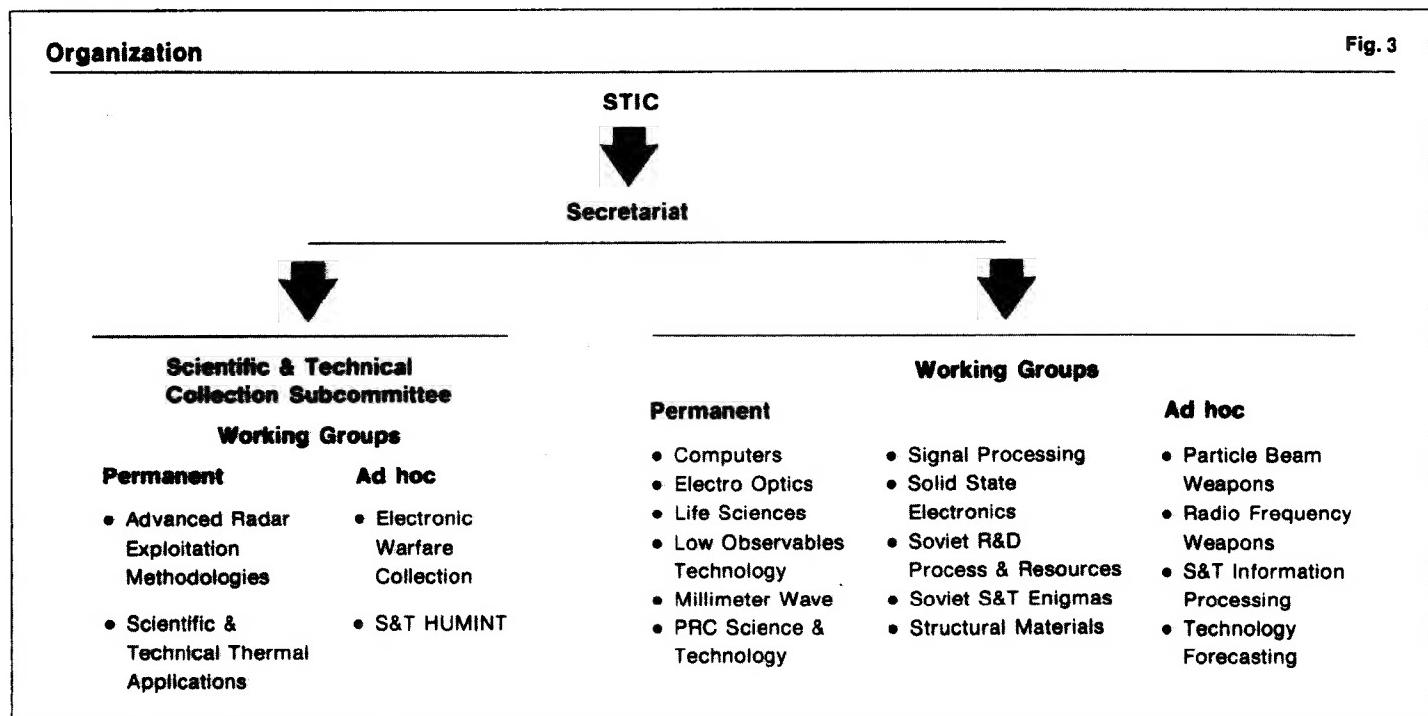
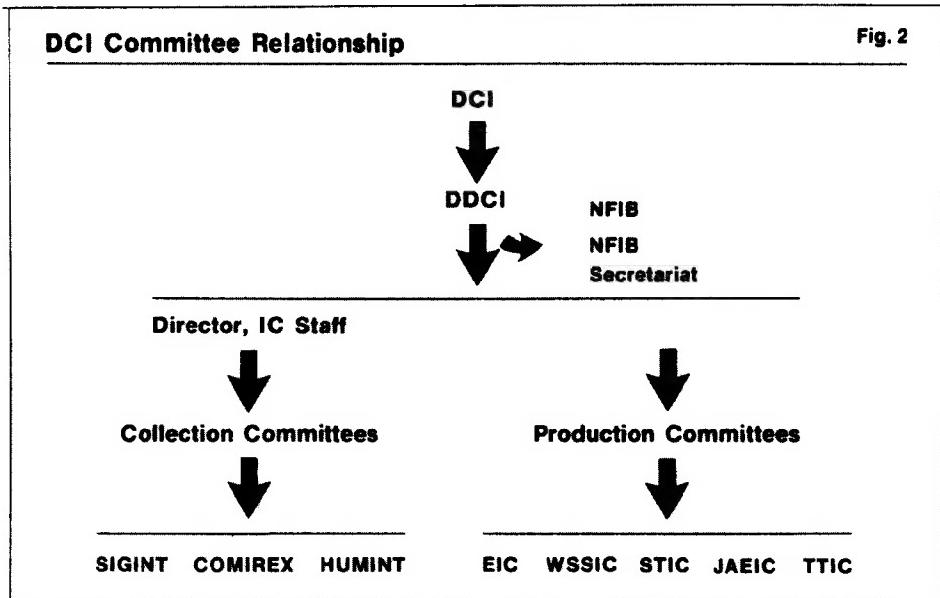
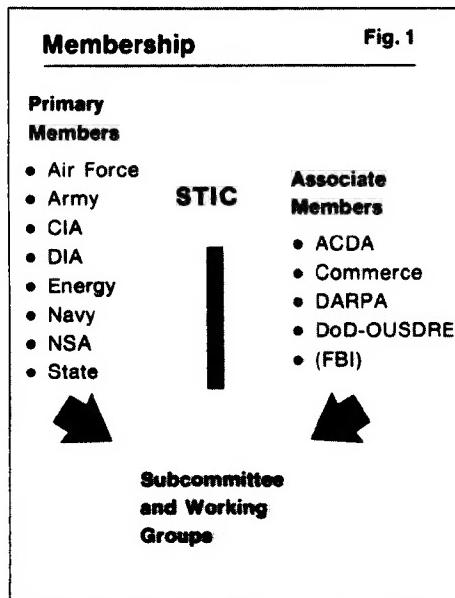
STIC is functionally organized into an Executive Planning Group, the parent committee, a Scientific and Technical Collection Subcommittee (STIC-C), and 19 Working Groups (Fig. 3), 4 of which directly support the Collection Subcommittee.

**Glossary**

<b>ACDA</b>	Arms Control and Disarmament Agency
<b>COMIREX</b>	Committee on Imagery, Requirements, and Exploitation
<b>DCI</b>	Director of Central Intelligence
<b>EIC</b>	Economic Intelligence Committee
<b>EW</b>	Electronic Warfare
<b>HUMINT</b>	Human Intelligence Committee
<b>IC</b>	Intelligence Community
<b>JAEIC</b>	Joint Atomic Energy Intelligence Committee
<b>LASINT</b>	Laser Intelligence
<b>NFIB</b>	National Foreign Intelligence Board
<b>OUSDRE</b>	Office of the Under Secretary of Defense for Research and Engineering
<b>PRC</b>	People's Republic of China
<b>S&amp;T</b>	Science and Technology
<b>SIGINT</b>	Signals Intelligence Committee
<b>STIC</b>	Scientific and Technical Intelligence Committee
<b>TTIC</b>	Technology Transfer Intelligence Committee
<b>WSSIC</b>	Weapons & Space Systems Intelligence Committee

**SECRET**

# technology transfer



The working groups address those S&T issues generally described by their titles to produce technical assessments on their respective technologies, collection and requirements guides, inputs to national estimates, and special studies in support of requests stemming from national level consumers or the Intelligence Community.

STIC focuses on 2 key functions:

- preventing technological surprise and

- assessing current sciences and technologies.

#### Technological surprise

Technological surprise refers to the concern that the USSR or any adversary may make a sudden S&T breakthrough that could strongly disadvantage the US strategically or tactically and thereby threaten our national security.

Central to preventing technological surprise is an understanding of Soviet

technology, which depends on

- access to technology information in the closed Soviet society that has adopted seemingly leak-proof security measures and
- understanding the leading edge of US scientific and technical achievement. [Though this understanding will assist in evaluating the level of achievement in the Soviet Union in science and technology (S&T) areas where the

Please turn to p. 7

**SECRET**

# technology transfer

## *DOE MCTL team continues work on Sec. 17 (U)*

(This article is FOR OFFICIAL USE ONLY.)

Because the expertise for nuclear- and other energy-related technology rests within the Department of Energy and its National Laboratories, the Department of Defense, which has primary responsibility for the Militarily Critical Technologies List (MCTL), has made DOE responsible for MCTL Sec. 17, the nuclear energy section.

DOE's MCTL team is composed of a DOE program monitor (in the Office of International Security Affairs), a technical coordinator from Los Alamos National Laboratory, and technical resource people from Los Alamos, Lawrence Livermore National Laboratory (LLNL), Oak Ridge National Laboratory (ORNL), Pacific Northwest Laboratory (PNL), Sandia National Laboratories—Albuquerque (SNLA), and Savannah River Laboratory (SRL). In addition, support for specific technical areas is sought from other DOE facilities as needed.

The DOE team meets 3 to 4 times a year at DOE sites or in Washington DC. Between meetings, members revise Sec. 17, write and revise Supporting Documentation for Sec. 17, and review other MCTL sections (for example, 1-3 and 6) relevant to DOE concerns.

Last year, the DOE team completely reorganized Sec. 17, ordering the subsections more logically and adding sections on magnetic flux compression generators and lithium isotope separation technologies. The team has also extensively rewritten some sections of Sec. 17 to ensure that it encompasses the very latest technology.

In addition, the team reviews its own work, so that team members with primary responsibility for a particular section benefit from the knowledge of other DOE experts.

DOE added cross references to all relevant control lists such as the Department of Commerce Commodity Control List (CCL), the Department of State Munitions List, and the Nuclear Regulatory Commission (NRC) license list. DOE will continue to reference actual control documents where possible and is encouraging incorporating MCTL items into the CCL where appropriate.

At the team's meeting at LLNL in early November 1983, the group established the following tasks for the next MCTL review cycle.

1. Indicate for each critical element of each technology whether that element is recommended for control and the legal basis for its control. (In addition to the national security concerns that are addressed by DoD, one of DOE's major goals for its MCTL work is to augment government-wide efforts to prevent nuclear weapon proliferation.) Alternatively, a critical element may be listed for information purposes and because knowledge of its purchase could be a useful indicator of proliferation activities, but the element may not be recommended for control because of wide commercial use, wide foreign availability, or other reasons that make control unfeasible.
2. Refine and expand the Sec. 17 index. Because the best and clearest key words for indexing can probably be provided by the



Arvid Lundy, DOE MCTL technical coordinator.

Photo by Johnnie Martinez.

### Technologies covered by the MCTL

Sec. 1	Computer System and Network Technology
Sec. 2	Computer Hardware Technology
Sec. 3	Computer Software Technology
Sec. 4	Automated Industrial Process Control Technology
Sec. 5	Materials Technology
Sec. 6	Directed Energy Technology
Sec. 7	Semiconductor and Electronic Component Technology
Sec. 8	Instrumentation Technology
Sec. 9	Telecommunications Technology
Sec. 10	Communication, Navigation, Guidance, Control, and Identification Technology
Sec. 11	Microwave Technology
Sec. 12	Vehicular Technology
Sec. 13	Optical and Low Energy Laser Technology
Sec. 14	Sensor Technology
Sec. 15	Undersea Systems Technology
Sec. 16	Chemical Technology
Sec. 17	Nuclear- and Energy-Related Technology
Sec. 18	Cryptologic Technology

**SECRET**

# technology transfer

authors and reviewers of individual sections, the DOE team is adding that activity to this year's tasking.

3. Encourage, with DoD, use of the MCTL in a data base format for user convenience and to allow rapid updating. The MCTL exists on DoD's FORDTIS system to which, at present, no one in DOE has access. Ultimately, putting the MCTL on a system using artificial intelligence (expert systems) concepts is desirable. DOE has discussed putting MCTL Sec. 17 on such a system but does not have the funds to do so.
4. Recommend restructuring the non-nuclear energy subsections (12.7, 17.7, and 17.8) into a single section.
5. Try to expand use of the MCTL within DOE.

Because DOE has a strong desire to coordinate its activities with other government agencies that work on the MCTL, the team invites input from DoD and DOC at its meetings. For example, last July at a meeting in Washington DC, the team invited all interested parties to an open hearing on its latest Sec. 17 revision and incorporated suggestions from that meeting into the final draft submitted to DoD.

Last fall, John Boidock, Director of DOC's Office of Export Administration; Paul Hopler, DoD's MCTL coordinator; and [redacted] Defense Intelligence Agency, made valuable contributions to the DOE document.

If you have questions, comments, or suggestions for the DOE MCTL team, call Arvid Lundy, DOE MCTL Technical Coordinator, 505-667-6922 (FTS 843-6922) or Bob Cutter, acting DOE MCTL Program Monitor, 202-252-2155 (FTS 252-2155).

—Roz Newmyer  
International Technology Division

25X1

## Criteria for judgment of criticality

The following criteria are adapted from a list drawn up for Air Force Systems Command by BK Dynamics.

<b>Mission value</b>	Technologies that support critical missions are strong candidates for export controls.
<b>Technology impact in mission</b>	Technologies that are crucial for certain missions and for which no viable alternative exists are very strong candidates for export controls.
<b>Pervasiveness</b>	Technologies that contribute some value to a wide variety of systems or missions are strong candidates for export controls.
<b>Leverage</b>	Success in warfare results from exploiting an adversary's weakness or capitalizing on one's own strength. Technologies that create or exploit asymmetries in this balance will be of high value to a potential adversary and are strong candidates for export controls.
<b>Lead/lag</b>	Technologies in which US industry possesses a demonstrable lead over Warsaw Pact industries are strong candidates for export controls.
<b>Soviet targeting</b>	Of the many technologies that are strong candidates for export control, high priority should be given to those the Soviets have targeted for acquisition.
<b>Cost/simplicity</b>	Technologies that radically lower cost or simplify operation are of great military value and should be considered for export controls.
<b>Maturity of technology</b>	Emerging technologies that have potential for a high payoff must be carefully guarded until their potential is fully understood.
<b>Foreign availability</b>	If a technology is critical but available from noncontrolled sources, it is a weak candidate for control.
<b>Control feasibility</b>	Controls for a technology must be both desirable and feasible before they can be implemented.
<p>The following criterion reflects DOE's special concern in the area of criticality (and is an addition to BK's original list).</p>	
<b>Nonproliferation</b>	Technologies that would allow a nation to develop a nuclear weapon program <i>must not be exported</i> .

**SECRET**

**SECRET**

# technology transfer

## *What's an MCTL?*

### **Export Administration Act (1979)**

Beginning in 1976 with the publication of the Bucy Report, which called attention to the national security problem posed by the export of some critical and dual use technologies, DoD has been compiling a critical technologies list.

In 1979, a formal mechanism for that list was mandated by the Export Administration Act (EAA), which gave DoD lead responsibility for assembling a Militarily Critical Technologies List (MCTL) and Commerce responsibility for implementation and enforcement.

The EAA was up for renewal in 1983, but the Senate could not agree on a new version, so the President imposed an Executive Order that is expected to remain in effect until final passage of the new Bill. The new EAA, when enacted, almost certainly will continue to mandate an MCTL. (The Newsletter will describe provisions of the new Act as soon as possible).

The MCTL was mandated by the EAA to emphasize for each critical technology, the "arrays of design and manufacturing know-how; keystone manufacturing, inspection, and test equipment; and goods accompanied by sophisticated operation, application, or maintenance know-how which are not possessed by countries to which exports are controlled...and which, if exported, would permit a significant advance in a military system" of any such country.

The EAA further states that the MCTL should be "sufficiently specific to guide the determination of any official exercising export licensing responsibilities under this Act . . ." Although efforts are

continually being made to make it more specific, the existing MCTL does not meet this criterion; furthermore, those who have been working closely with the MCTL have found this directive in the Act to be extremely difficult, if not impossible, to implement.

As DoD has developed the MCTL, the principal focus has been on controlling technology transfer to the Soviet Bloc, but DOE has also emphasized nuclear nonproliferation concerns in its input to the MCTL.

### **Style and purpose**

Calling the MCTL a "list" is somewhat misleading because it consists of encyclopedia-like prose sections that describe technologies as well as concise statements of the critical elements needed to implement each technology.

MCTL contributors strive to write clear, simple, readable, and accurate descriptions of each technology and subdivision of that technology and to characterize succinctly the rationale for that technology being considered militarily critical. These description and rationale sections can be useful to policy makers who need to familiarize themselves with technologies outside their background areas.

Though the MCTL is not in itself a control document, it is a useful reference for developing control lists. For example, the MCTL is being used to establish a US position for international export control regulations by the Coordinating Committee (COCOM), which consists of NATO members plus Japan less Iceland and Spain, and has been used in developing

a list of gas-centrifuge-related components that have been incorporated into the internationally recognized Zangger trigger list.

In addition to the main text, Supporting Documentation is being developed to provide further technical notes and to describe foreign capabilities for each technology.

With its Supporting Documentation, the MCTL is becoming recognized as a useful technology reference for any form of technology transfer control, such as trade shows, technical data transfer, and foreign visits and exchanges. For security review purposes, the MCTL can serve as a flag to identify material that may require wider review as well as an indicator for intelligence targeting.

The MCTL has been revised, refined, reorganized, and reedited annually since 1979. DoD has a contract with the Institute for Defense Analysis (IDA) for coordinating work on the MCTL and for producing the finished document after each revision. The mechanism used by IDA for MCTL review and revision is the Technical Working Group (TWG), which comprises representatives from executive departments and industry.

Because technology transfer control can have a strong impact on industry, IDA and DoD got industry input in 1982 by submitting the MCTL for review by the Multi-Association Policy Advisory Group (MAPAG), composed entirely of industry representation.

### **DOE's MCTL Team**

<b>DOE HQ</b>	<b>Los Alamos</b>	<b>LLNL</b>	<b>ORNL</b>	<b>PNL</b>	<b>SNLA</b>	<b>SRL</b>
<b>Bob Cutter</b>	Arvid Lundy Don Janney Bert Helmick Jasper Jackson Tom McDonald Roz Newmyer Jim Ramsbotham, consultant	John Illige John Sherohman George Anzelon	S. A. Levin Jerry Malling Shell Jacobs	Jim Davidson Ron Melton Marvin Erikson	Roger Hagengruber Jim Corey Bob Hughen	Don Orth

**SECRET**

**SECRET**

# technology transfer

25X1

## *STIC, cont.* 25X1

25X1

Soviets have parity with the US.

Problems associated with understanding Soviet technology and the resultant difficulty in arriving at accurate and current comparative US-Soviet technology assessments have forced the Intelligence-R&D-Industrial communities into polarized spheres of technology interests, each with varying degrees of expertise. As a result, technological surprise for a given technology becomes difficult to define, and, if construed as supporting a parochial interest, difficult to defend to policy and decision makers. Unfortunately, this difficulty tends to weaken efforts to prevent such surprise.

To assess current S&T, STIC enlists the aid of qualified scientists and engineers in the S&T centers, the various national level intelligence agencies and government departments, and, most importantly, national laboratories.

Lawrence Livermore, Los Alamos, Pacific Northwest, and Sandia National Laboratories, through DOE, provide an understanding of the leading edge in many S&T areas of interest through their effective participation in STIC working groups.

25X1

By producing timely and accurate assessments, collection guides, and other finished intelligence products, STIC is ensuring that US policy and decision makers have for their consideration those intelligence tools necessary to the prevention of technological surprise and, hence, the promotion of national security.

**SECRET**

**SECRET****distribution****Department of Energy, Washington, DC**

1-37

The Secretary, Donald Paul Hodel, S-1  
 Deputy Secretary, Danny J. Boggs, S-2  
 The Under Secretary, Pat Collins, S-3  
 Assistant Secretary for Defense Programs, DP-1  
 Director of Energy Research, Alvin W. Trivelpiece, ER-1  
 Assistant Secretary for International Affairs and Energy Emergencies, Helmut A. Merklein, IE-1  
 Assistant Secretary for Nuclear Energy, Shelby T. Brewer, NE-1  
 Assistant Secretary for Fossil Energy, William A. Vaughn, FE-1  
 Assistant Secretary for Policy, Safety, and Environment, Jan W. Mares, PE-1  
 A. Morgan, CP-20  
 M. E. Whitley, DP-3  
 F. C. Gilbert, DP-10  
 W. W. Hoover, DP-20  
 R. L. Schriever, DP-23  
 J. W. Culpepper, DP-30  
 R. T. Duff, DP-32  
 J. L. Torres, DP-33  
 G. F. Dickerson, DP-33.1  
 J. F. Raymond, DP-332.1  
 C. Thorne, DP-332  
 R. L. Bingham, DP-332.2  
 Richard Bowen, DP-332.2  
 J. R. Cutler, DP-332.2  
 W. Henoeh, DP-332.2  
 Harvey B. Jones, DP-333  
 R. E. Caudle, DP-34  
 M. J. Dowd, DP-35  
 Charles Boykin, DP-40  
 L. C. Ritchie, DP-353  
 J. S. Kane, ER-2  
 R. H. Kropschot, ER-10  
 J. E. Leiss, ER-20  
 J. F. Clarke, ER-51  
 H. Jaffe, IA-22  
 E. E. Anschutz, NE-6  
 F. E. Coffman, NE-30  
 N. Haberman, NE-620

**Department of Energy Field Offices**

Albuquerque Operations Office  
 Doug Denham  
 Mary G. Carlyon  
 Nevada Operations Office  
 Oak Ridge Operations Office  
 Richland Operations Office  
 Savannah River Operations Office  
 Chicago Operations Office  
 San Francisco Operations Office  
 Idaho Operations Office

38-40

**National Laboratories**

Los Alamos National Laboratory  
 Director, Donald M. Kerr  
 Robert N. Thorn  
 Karl Braithwaite  
 Allen L. Jennings  
 John H. Birely  
 Michael E. Berger  
 Kaye D. Lathrop  
 C. Paul Robinson  
 Robert W. Selden  
 Warren F. Miller, Jr.  
 Christopher Adams, Jr.  
 Judith M. Liersch  
 James M. Williams  
 Steven A. Maaranen  
 Darlene C. Hoffman  
 Keith Taggart  
 O'Dean P. Judd  
 Lara H. Baker, Jr.  
 Jay Norman  
 John F. Barnes  
 David Watkins  
 Donald Wolkertorfer  
 John McDonald  
 Report Library, Dan Baca  
 Jill Warren (50 copies)  
 Lawrence Livermore National Laboratory  
 Director, Roger Batzel  
 John D. Anderson  
 John L. Emmett  
 T. Kenneth Fowler  
 Michael M. May  
 A. Carl Haussmann  
 Robert Andrews  
 G. Staehle

**Sandia National Laboratories, Albuquerque, NM**

138-145

President, G. C. Dacey  
 Gerold Yonas  
 B. L. Gregory  
 J. C. King  
 Roger Hageneruber (2 copies)  
 James Corey  
 Robert P. Stromberg  
 Sandia National Laboratories  
 Livermore, CA  
 Richard Claassen  
 Oak Ridge National Laboratory  
 Director, Herman Postma  
 M. W. Rosenthal  
 Oak Ridge Gaseous Diffusion Plant  
 J. T. Bradbury  
 S. A. Levin  
 Oak Ridge Y-1 Plant  
 Ronald Miskell  
 Gordon G. Fee  
 Brookhaven National Laboratory  
 Director, N. P. Samios  
 Savannah River Laboratory  
 Director  
 Pacific Northwest Laboratory  
 James M. Davidson  
 R. B. Melton  
**Department of Energy Area Offices**  
 Amarillo Area Office  
 Kansas Area Office  
 Pinellas Area Office  
 Dayton Area Office  
 Los Alamos Area Office  
 Rocky Flats Area Office  
**Department of Commerce,**  
 Office of Intelligence Liaison  
 William Brown  
 Keith Fennell  
 Assistant Secretary for Trade Administration  
 Assistant Secretary for Productivity, Technology, and Innovation, Bruce Merrifield  
 Director, Office of Export Administration, John Boidock  
 Anatoli Welhozkiy  
 H. Mitman  
 Dan Hoydish  
 Albert P. Solga, OEA ITA  
 Deputy Assistant Secretary for Export Enforcement, Theodore Wu  
 National Bureau of Standards, Director Edward L. Brady  
 Howard Sorrows  
 Carl Shepard, OPTI  
**Department of State**  
 The Under Secretary, William Schneider, Jr.  
 Director, PM/STN (2 copies)  
 David Wilson, EBI  
 Robert Upchurch, INR/PMA  
 Teresa C. Jones, INR/PMA  
 Dean Howells, INR/PMA  
 William Robinson, Director, PM/MC-SA-6  
 Samuel Tomson, OESISCT  
 Michael Marks, T  
 Edward Herwitz, EUR/SOV  
 Michael G. Anderson, EUR/EE  
 Richard Boucher  
 EA/C  
 Ron Kirkpatrick, EB/EWT  
 Victor Comras, EUR/RPE  
 John Danylyk, INR/EC  
 Martin Prochnik, OES/NTC  
 James Devine, OESN  
 Carlton Stoiber, OES/NEC  
 Allan Sessions, OES/NTS  
 Fred McGoldrick, OES/NEP  
 Richard Kennedy, INR/SEE  
 Louis Dunn, ACDA  
 Dean Rust, ACDA

**Department of Treasury**

201-209

Assistant Secretary for Enforcement and Operations  
 Commissioner of Customs  
 Assistant Commissioner for Enforcement  
 Director of Investigations  
 Director, Strategic Investigation Division  
 Chief, Field Operations Branch  
 Chief, Technical Branch  
 Chief, Munitions Control Branch  
 Director, Intelligence Technology Division  
 Los Angeles Customs  
 Allan D. Walls  
 Bob Olson

210-211

Bertram Smith  
 R. G. Priddy, DAMI  
 Lawrence Mounter  
 Commander, US Army Missile Command, DRSMI-XO

280

Aberdeen Proving Ground, DRSTE-CM-F

281

John Otto, ITAC

282

Commander, Security Support Detachment

283

Edward Brown, Harry Diamond Laboratories

284

William J. Hughes

285

Department of the Navy

286-290

Max Koontz, NISC

286-290

E. A. McCulloch, NISC/CB

286-290

Clarence E. Field, NISC

286-290

Howard Greyber NISC/41

286-290

LCDR Michael Bartol, NISC-41

286-290

Bobby Ellison, NAV 091

291

Betty Cintron, OpNav 623

292-296

(4 copies)

292-296

Col. Darwin Lundberg

297-299

John Dunlavy, MAT-081, (3 copies)

297-299

George Lindsteadt, Naval Weapons Center

300

Richard Mark, Pacific Missile Test Center

301

Central Intelligence Agency, Deputy Director, John McMahon

302-346

25X1

**Department of the Air Force**

243-244

Director, FTD

243-244

Jerry Roberts, FTD

243-244

James Bartley, FTD/TQTA

246-247

E. Chase, FTD/TQTA

246-247

Maj. Price, FTD/SDBG

248

Col. George W. Williams, SHAPE

249

Major Tom Dyble, AF/INET

250-251

Capt. Ray Vitkus, AF/INET

252-

Commander, Air Force Weapons Laboratory

259-256

Capt. Michael Soukup, AFWAL-IN

259-256

AFWL-CA

259-256

A. Basso, AFWAL/GLXPI

260-262

1Lt Ehren V. Fornoles, YH

260-262

John McMann, AFSC

260-262

John McMann, AFSC

267

A. Chruscicki, RADC/COEE

268

Al Young, AFATL/DLXP

269

HQ USAF/CVAIP

270

Barry Tell

270

Maj. James Engel HQ USAF/XOXIP

271

Capt. R. Lyons, ESD/XRVT

272

M. L. Laster, AEDC/DOT

273

Sherman Chan, HQ AFLC/AQ

274

Maj. Kevin Yelmgren, BMO/SYMS

275

Noreen Dimond, AFGL/XOP

276

D. Pierce, RADC/DOT

277

Matt Kerper, AFOSR/XOT

278

John Jones, HQ AFCDM/SP

279

H. J. Stachowski, ASD/XR

279

Lt. Col. James Turner, AMD/XRX

280

Robert L. Wisewell, AFPRPL/XRX

281

Capt. Kevin E. Peterson, HQ AFOSI/IVOAB

282

Maj. Dennis Zack, HQ AFSC/INA

283

Department of the Army

276-279

Commander, Foreign Science Technology Center (FSTC), Charlottesville, VA

276-279

**National Security Agency, T532**

347-372

**National Security Council**

373-376

**Office of Science Technology Policy**

377-379

**President's Foreign Intelligence Advisory Board**

380

**National Aeronautics and Space Administration, Washington, DC**

381

**Director, Jet Propulsion Laboratory**

382-383

**Langley Research Center**

384

**M. Leroy Spearman**

385

**Lyndon B. Johnson Space Center**

385

**Joseph Loftus**

386

**Director, Greenbelt Laboratory**

387

**John F. Kennedy Space Center**

387

**Kenneth E. Lopez**

388

**Lewis Research Center**

388-389

**Andrew F. Corcoran**

388-389

**Harold D. Wharton**

389

**National Space Technology Laboratories**

390

**Henry Speir**

390

**Nuclear Regulatory Commission**

391-392

**Marvin Peterson**

391-392

**Raymond Brady**

391-392

**SECRET**